

May 5 & 6, 2010
Board Meeting Minutes

Montana Board of Research and Commercialization Technology
Board Meeting
301 South Park, #228
May 5 & 6, 2010

Board Members Attending:

Marty Connell, Chairman
Jim Davison
Todd Graetz
Erik Somerfeld
Paul Tuss

Board Member Absent:

Michael Dolson

Others Attending:

Dave Desch, Executive Director
Jane Todd, Administrative Specialist

I. Call to Order

Chairman Marty Connell called the meeting to order at 9:00 a.m.

II. Approval of Minutes

Dave Desch asked for comments regarding the Minutes of the March 15, 2010, Board Meeting. In response to a question regarding the spelling of a name, it was determined the name was spelled correctly. Jim Davison moved to approve the Minutes. Seconded by Paul Tuss, the Minutes were approved as presented.

III. Review and discussion of proposals submitted March 1, 2010

Dave Desch gave a brief summary of the process that the Board has used to review proposals. The Board has \$1.3 million available for new projects this year. He reminded the Board that next year there will be about \$1 million available, a factor that may influence the Board's decisions as far as funding two-year projects. The Board continues to meet the production agriculture statutory criteria of 20% with a current percentage of 25% overall. With regard to clean coal/renewable resources, the Board met the 30% statutory criteria in the previous funding round and will need to meet the 30% level in this round of funding.

The Board proceeded to discuss in detail each of the proposals submitted March 1, 2010:

#11-01 C5-C7 Value-Added "Montana Specialty Alkanes"
Ron Colwell, Montana Refining Company, Great Falls
\$192,745

The Board liked this project because:

- Existing company with a history of being able to produce products

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- Potential to contribute to creation of a new industry
- Company's past successes
- Great Falls location
- Potential for near-term commercialization
- Potential expansion and construction of new facilities
- Small Montana company doing something different than the norm
- Importance from an economic development perspective

The Board expressed concerns as follows:

- Economic feasibility of biodiesel industry
- Potential impacts if carbon offsets are included in a national energy bill
- Commercialization plan could have more detail

#11-02 Development of a Low-Cost Hybrid Coal
Duane Johnson, Phoenix Rising, Inc., Big Fork
\$62,000

The Board liked this project because:

- Reasonable monetary request
- Concept sounds good
- Co-PI is good researcher

The Board expressed concerns as follows:

- Past experience with PI
- Concern whether the concept is novel, doable, economically feasible

#11-03 Manufacturing Process to Produce EverLog Siding
Stewart Hansen, EverLog Systems, Missoula
\$50,000

The Board liked this project because:

- Well-written proposal
- Impressive promotional materials
- Unique, cutting-edge product

The Board expressed concerns as follows:

- Whether project meets statutory criteria
- Other resources may be more appropriate than MBRCT, e.g. upcoming DNRC, BLM, Forest Service grants
- Concern that proposal is too heavily weighted toward marketing a product

#11-04 Advanced Pump Laser Development for Mid-IR Chemical Sensor
Wm. Randall Babbitt, Montana State University, Bozeman
\$129,942

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The Board liked this project because:

- Proposal iterates advancement of the optics industry in Montana over last 10 years

The Board expressed concerns as follows:

- Little different from previous proposals for the same technology
- Potential legal issues surrounding the use of the technology

#11-05 Commercialization of Optical Analog Waveform Generation (OAWG) Hardware
Kristian Merkel, S2 Corporation, Bozeman
\$83,706

The Board liked this project because:

- Significance of on-demand concept
- Builds on established funding from DARPA, MBRCT and SBIR awards
- Request is for meeting additional research milestones toward commercialization
- Low risk, medium-to high commercialization, short to medium time frame
- Ability to draw from Gallatin Valley optics industry
- Significance of military applications
- No previous description in public domain – use of common components in a “new and elegant way”
- Potential for significant improvement over current state-of-the-art techniques
- Good company to work with

The Board expressed no particular concerns.

#11-06 Direct Conversion of Lignocellulosic Feedstocks to Lipids and High-Value Products Using a Proprietary Microbial Process
Mark Kozubal, Sustainable Bioproducts, Bozeman
\$149,800

The Board liked this project because:

- A missing component in creation of an ethanol industry in Montana
- Potential for significant income producing
- Cutting-edge use of organisms in Yellowstone National Park
- Patent pending
- Near-term commercialization

The Board expressed concerns as follows:

- Budget may be high considering MBRCT budget limitations

#11-07 Validating and Deploying Genes Conferring Enhanced Straw-Based Ethanol Production Potential for Barley Straw and Forage
Victoria Carollo, Montana State University, Bozeman
\$47,645

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The Board liked this project because:

- Good credentials of investigators

The Board expressed concerns as follows:

- How realistic is this?
- Underestimate complexities of straw-based ethanol
- Doesn't compare as well as other production agriculture proposals
- Current status of the ethanol industry

#11-08 Research Series to Study the Impact of an Innovative Treatment for Systemic Inflammation Associated with Common Disease Processes in the Heart, Lung, Brain, Renal and GI systems

Joel Lankford, St. Patrick Hospital & Health Foundation, Missoula

\$468,260

The Board liked this project because:

- Cutting-edge work
- Well regarded administrator

The Board expressed concerns as follows:

- Amount of request is very large
- Board does not have the kind of money they're asking for

#11-09 High-Performance Spectral Sensor Crystals for Photonic Signal Processing Applications

Rufus Cone, Montana State University, Bozeman

\$79,990

The Board expressed no particular interest in the project.

#11-10 Multiple Strategy Winter Wheat Cultivar Development for Montana

Phil Bruckner, Montana State University, Bozeman

\$136,000

The Board expressed concerns as follows:

- Other companies are doing this
- Nothing new or novel
- Better projects for the Board's money

#11-11 Second Phase Clinical Trials of a Lypolytic Compound

Jeff Golini, All American Pharmaceutical, Billings

\$80,000

The Board liked this project because:

- Well-run, profitable company

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- State-of-the-art facility
- Entrepreneur who makes things work, hires people, and sells product
- Supportive of MBRCT program
- Future of nutraceutical industry is promising

The Board expressed concerns as follows:

- Project is more attractive if funding request is reduced

#11-12 Multifunctional Platform to Sense, Process and Adaptively Generate Ultra-Wideband Waveforms for Defense and Medical Applications
Krishna Rupavatharam, Montana State University, Bozeman
\$90,941

The Board liked this project because:

- Future of Ultra-wideband promising

The Board expressed concerns as follows:

- Research may not be on the cutting edge

#11-13 Remote Sensing of Tree Mortality along Montana Electric Utility Corridors
Scott Powell, Montana State University, Bozeman
\$169,569

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Funding request is large
- Competing methods available for this application

#11-14 Core Wind Direct Driver (Gearless) Generator Technology for Megawatt Scale Core/Boulder Wind Turbines
Matt Jore, Core Wind Power, Ronan
\$375,000

The Board liked this project because:

- Possibility the technology might work

The Board showed concerns as follows:

- Appears to be a modification of a existing technology
- Execution capability of PI
- Financial position of company
- May not meet program criteria in terms of this being a Montana project
- Funding request is very large considering money available to Board for funding new projects

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#11-15 Coal Explorer™ - Rapid Quantification of Mineral Matter in Coal Using Automated Electron and X-Ray Microanalysis
Hank Rawlins, eProcess Technologies U.S., Butte
\$131,359

The Board liked this project because:

- Portable electron microscope is interesting concept

The Board showed concerns as follows:

- Consideration of where in the process analysis would take place
- Peer review not promising

#11-16 Intelligent Proppant (iProppant™) – Activation of Solid State Reaction Mechanisms in Ceramic Proppant Material as a Method to Modify Fracture Path Flow
Hank Rawlins, eProcess Technologies U.S., Butte
\$90,200

The Board liked this project because:

- Growing market with significant potential
- Good project for Butte because of facilities and access to heavy rail

The Board expressed concerns as follows:

- Significant risk
- Questions regarding peer review

The Board requested a presentation of this project.

#11-17 Development of Ammonia Based Fuels for Environmentally Friendly Power Generation
David Micheletti, Montana Aerospace Development Association, Butte
\$223,858

[Note: Paul Tuss recused himself due to his position on the MADA Board of Directors.]

The Board liked this project because:

- Novel concept to convert gas turbines to burn ammonia instead of natural gas
- Successful project would be environmentally beneficial
- Appears to be an innovative concept

The Board expressed concerns as follows:

- Viability of ammonia synthesis technology
- Funding request is large considering the money available to the Board for funding new projects
- Potential toxicity of ammonia

The Board requested a presentation of this project.

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#11-18 Technology for Tomorrow's Montana Project Hydrogen Refueling Station Completion

R. Paul Williamson, University of Montana, Missoula
\$121,200

The Board liked this project because:

- Potential for hydrogen as energy source

The Board expressed concerns as follows:

- May not be best fit for MBRCT program
- Proposal lacks innovative research component
- Does not compare as well with other proposals

#11-19 Forest Residue Utilization via Portable Bioenergy Generators

Brian Kerns, University of Montana, Missoula
\$150,000

The Board liked this project because:

- What to do with Montana's forest residue is vital, long-term issue
- Technology fairly proven

The Board expressed concerns as follows:

- Unclear whether approach is workable
- Marketing plan could be stronger
- Budget may be excessive
- Not particularly innovative

#11-20 Universal Healthier Helmet

Tashina Tibbitts, A&S Diversified Inc., Poplar
\$140,000

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Similar products already in the market
- Work will be performed out of state
- Not novel or innovative
- Proposal lacks detailed discussion of research to be performed

#11-21 Dose Optimization of Methamphetamine as a Neuroprotective Treatment for Traumatic Brain Injury

David Poulsen, University of Montana, Missoula
\$124,323

The Board liked this project because:

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- Successful results could lead to drug for treating strokes and traumatic head injuries
- Success in previously funded work
- Good example of spin-off companies/new projects evolving from Board's far-sight in funding infrastructure

The Board expressed concerns as follows:

- Perception of Board funding research involving methamphetamine

#11-22 Enhancement of Applied Research in Biomedicine
Richard Bridges, University of Montana, Missoula
\$161,344

The Board liked this project because:

- Successful use of previous funding
- Supportive of MBRCT program to legislature
- Leveraged funds to bring over \$22 million of new money to Montana over less than a decade
- Important in terms of neuroscience research in Montana
- NIH reviewers commend the State of Montana for its involvement
- Building critical mass in the basic industry of bioscience

The Board expressed no particular concerns.

#11-23 Identifying and Quantifying Viruses in Mountain Pine Beetles and Southern Pine Beetles for Selection and Isolation as Biological Controls
David Wick, BVS, Inc., Missoula
\$120,191

The Board liked this project because:

- Basic research for which there is a current need

The Board expressed concerns as follows:

- May be too late to be useful
- Potential for viruses causing other problems

#11-24 MEMS-Based Micro Zoom Lens for Cell Phone Cameras
Brant Kaylor, Bridger Photonics, Bozeman
\$100,135

The Board liked this project because:

- Potential for significant commercialization in the near term
- Potential to license intellectual property
- Meets MBRCT requirements well
- Builds on previously funded work

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- Collaboration with other MBRCT grant recipients

The Board expressed concerns as follows:

- May not be manufactured in Montana

#11-25 A New Agrichemical Biosensor
Charles Thompson, ATERIS Technologies, Missoula
\$334,000

The Board expressed no particular interest in the project.

The Board expressed concerns as follows:

- Appears to be technology looking for funding
- Question whether there is a market for the technology
- Does not compare as well with others proposals considering the money available to the Board for funding new projects

#11-26 Continued Development of Applications for Inhibitors of Fungal Morphogenesis
Kurt Toenjes, Montana State University Billings, Billings
\$100,000

The Board liked this project because:

- Potential to solve serious problems associated with fungal infections
- PIs have made good progress with use of previous funds
- Importance of supporting research at MSU Billings
- Receipt of NIH grant indicates recognition that federal granting agency understands the serious nature of the problem

The Board expressed no particular concerns.

#11-27 Brayton Cycle Biomass Power Generation
Philip Kedrowski, Redleaf Consulting, Big Sky
\$154,100

The Board liked this project because:

- Well-written proposal

The Board expressed concerns as follows:

- Economic viability
- Uncertainty as to whether it is novel or new

#11-28 Novel Methods for Yield Improvement in Manufacturing Periodically Poled KTP Waveguides
Christopher Kaleva, AdvR, Inc., Bozeman
\$149,735

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The Board liked this project because:

- NASA partnership
- Good company to work with
- Successful previously funded projects
- Good commercialization potential

The Board expressed concerns as follows:

- Better projects considering the money available to the Board for funding new projects

#11-29 The Grid Defender

Dennis Bell, Grid Defender, Inc., Philipsburg

\$52,400

The Board liked this project because:

- Manufacturing potential for Montana

The Board expressed concerns as follows:

- Lacks plausibility that power companies will buy in to the concept
- No practical applications because Montana does not have the described issues

#11-30 Research to Identify and Validate a New Type of Early Warning Market for Type 2 Diabetes

Edward Dratz, Montana State University, Bozeman

\$75,000

The Board liked this project because:

- Type 2 Diabetes is a serious problem
- NIH grant

The Board expressed concerns as follows:

- Better projects considering the money available to the Board for funding new projects

#11-31 High Amylose Durum Wheat

Mike Giroux, Montana State University, Bozeman

\$70,998

The Board showed no particular interest in the project.

The Board expressed concerns as follows:

- Better production agriculture projects considering the money available to the Board for funding new projects
- Durum is not a big dollar commodity in Montana

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- Not particularly novel

#11-32 RF Source Precision Location and Tracking
Yikun Huang, Montana State University, Bozeman
\$86,130

The Board expressed no particular interest in this project.

The Board expressed no particular concerns regarding this project.

#11-33 Manufacture of Wavefront Guided Progressive Multifocal Contact Lens
Stephen Dunn, WaveSource, Inc., Whitefish
\$87,633

The Board liked this project because:

- Positive support letters and peer reviews
- Manufacturing in Kalispell area
- Short-term commercialization
- Well-written proposal
- Unique opportunity
- Utilization of MBRCT funding to legitimize their efforts from a research standpoint

The Board expressed concerns as follows:

- FDA, regulatory approval
- Can economic advantages support manufacturing in Montana?

#11-34 Pheromone Mimic and Olfactory Terminator for Control of the Mountain Pine Beetle
Marshall Wilson, DenDroCo, LLC, Helena
\$71,649

The Board liked this project because:

- Beetle problem is huge

The Board expressed concerns as follows:

- Research conducted in Ohio
- Is three-year commercialization time frame realistic?
- May be late to make a difference on a large scale

#11-35 Anti-Microbial Photodynamic Therapy to Prevent Surgical Site Multiple Drug-Resistant Infections
Jean Starkey, Montana State University, Bozeman
\$70,144

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The Board liked this project because:

- Builds on previously funded projects
- Contributes to building basic biofilm industry in Montana

The Board expressed no particular concerns.

#11-36 Improving Milling and End Use Quality of Montana Wheat
John Martin, Montana State University, Bozeman
\$123,000

The Board showed no particular interest in this project.

The Board expressed no particular concerns.

#11-37 An Integrated Platform for Cell-Based Drug Discovery
Anne Marie Quinn, Montana Molecular, Bozeman
\$99,935

The Board liked this project because:

- Continues established research
- Combines strength and synergy of two entities, Montana Molecular and Florescence Innovations
- Significant potential for near-term commercialization
- Successful partnerships
- Strong advocate for MBRCT program

The Board expressed no particular concerns.

#11-38 Hard White Wheat: Jump-Starting a New Industry for Montana Agriculture
Luther Talbert, Montana State University, Bozeman
\$140,000

The Board liked this project because:

- Supportive letter from Western Wheat Quality Lab
- Production agriculture project that needs the money
- Opens a new market for wheat without competing against itself
- Will produce a white bread that is whole wheat
- Licensing of genes
- Global market potential, particularly Japan
- PI does cutting-edge research

The Board expressed no particular concerns.

#11-39 Enhanced Oil Recovery in Montana Using CO₂ from the Clean-Coal Retrofit of a Montana Coal Power Plant for Carbon Capture and Sequestration (CCS)

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Leo Heath, Montana Tech, Butte
\$318,955

The Board liked this project because:

- Good idea for Montana
- Addresses CO₂ problem

The Board expressed concerns as follows:

- Uncertainty as to future regulation of CO₂ sequestration
- Would like to see additional peer review
- Why isn't the industry funding this?

The Board requested a presentation.

#11-40 Cloud Computing Deployment and Scaling Technology
Bobby Clay, SameSky Tickets, LLC, Missoula
\$125,000

The Board showed no particular interest in this project because what is being proposed is already being done. There is nothing new or novel in the proposal.

#11-41 Digital Beam Forming Antennas for Rural Applications
Richard Wolff, Montana State University, Bozeman
\$258,702

The Board expressed no particular interest in this project.

The Board expressed concerns as follows:

- Window of opportunity has passed for previously funded projects to have done something
- Other competing technologies are quickly advancing and will change the face of rural America

#11-42 Monitoring Agricultural Irrigation System Performance Using Satellite Imagery
Cody Benkelman, Mission Mountain Technology Associates, Whitefish
\$106,544

The Board showed no particular interest in the project.

The Board expressed concerns as follows:

- A portion of the project will be conducted in the state of Washington
- Unconvincing demand or market for the product

#11-43 Research and Development of a Heat Transfer Mechanism from a Large Scale Composting Operation
David Tooke, American Food Products, Florence

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\$124,875

The Board liked this project because:

- Good idea

The Board expressed concerns as follows:

- Limited number of large composting sites in Montana
- Limited access to fresh produce
- Simple idea made overly complex

#11-44 Development of a Smart Stethoscope for Assisted and Telediagnosis of Sounds of the Circulatory, Respiratory, and Gastrointestinal Systems of Livestock and Pets
Robert Seccomb, Bee Alert Technology, Inc., Missoula
\$130,000

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Impractical application
- Disappointing direction in which to move previously funded bee research

V. Adjournment

The meeting ended at 4:45 p.m. and will resume at 8:30 a.m. on May 6, 2010.

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301 South Park, #228
May 6, 2010

Board Members Attending:

Marty Connell, Chairman
Jim Davison
Todd Graetz
Erik Somerfeld
Paul Tuss

Board Member Not Attending:

Michael Dolson

Others Attending:

Dave Desch, Executive Director
Jane Todd, Administrative Specialist

I. Call to Order

Marty Connell called the meeting to order at 8:35 a.m.

II. Continue Review and Discussion of Proposals Submitted March 1, 2010

#11-45 Nanoparticle-Bacteriophage Cocktails to Combat Infectious Disease
Marisa Pedulla, Montana Tech/Montana State University, Butte/Bozeman
\$113,050

The Board liked this project because:

- Significant project with potential to move Montana into nucleus of biotechnology research
- Good use of funds
- Well-written proposal

The Board expressed no particular concerns regarding this project.

#11-46 Improved Water Quality Using Floating Wetland Treatment System Technology
Alfred Cunningham, Montana State University, Bozeman
\$120,077

The Board liked this project because:

- Commercialization success – selling floating islands
- PI is excellent researcher, generates good work
- Created a new industry in Montana

The Board expressed concerns as follows:

- Funded two previous projects

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- Nothing particularly novel at this point
- Other more deserving projects considering money available to Board for funding new projects
- Lack of focus of specific markets

#11-47 Solar Side Roll Sprinkler Movers
Zack Wirth, Rocking Z Innovation, LLP, Wolf Creek
\$60,000

The Board liked this project because:

- In-house inventor trying to make farm life more efficient
- Solar aspect
- Novel concept

The Board expressed concerns as follows:

- Very small niche market
- Impractical for day-to-day operations

#11-48 Economic Capture of Molecular Pollutants Inhibiting Agricultural and Energy Resource Development
Richard Hammen, IntelliMet, LLC, Missoula
\$95,586

The Board liked this project because:

- Merit in coal bed methane portion
- Funding support from EPA

The Board expressed concerns as follows:

- Production agriculture portion of proposal is weak

#11-49 Biometric Field Data Acquisition Unit (BDAQ)
Brandon Smith, Brastero Technologies, LLC, Polson
\$151,250

The Board liked this project because:

- Funding from Army Intelligence Lab
- Practical application
- Partnership with S&K Electronics

The Board expressed concerns as follows:

- Will this be manufactured in Montana?
- What is status of Army funding?

The Board requested a presentation.

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#11-50 Integration of Passive Seismic, Electrical and Temperature Measurements for Geothermal Resource Exploration
Leif Cox, Montana Tech, Butte
\$53,760

The Board liked this project because:

- Reasonable request
- Use of super computer in Butte

The Board expressed concerns as follows:

- Status of previous project

The Board requested a presentation.

#11-51 Development of an Advanced Single-Use Acoustic Shake Flask
Todd McAdams, Resodyn Corporation, Butte
\$98,250

The Board liked this project because:

- Interesting proposal
- Existing industrial partner for shaker technology
- Complete commercialization plan
- Manufacture product in Montana
- President of company supportive of MBRCT program to legislators

The Board expressed concerns as follows:

- Environmental waste associated with disposable product

#11-52 Construct and Operate a Pilot Scale Hemostatic Agent Manufacture Facility for Hemorrhage Control and Wound Dressing Production
Fangxiao Yang, Resodyn Corporation, Butte
\$200,000

The Board liked this project because:

- Substantial federal funding

The Board expressed concerns as follows:

- Budget request is high
- Unclear why need for MBRCT funding
- Does this fit criteria in terms of a research component?
- Unlikely manufacturing would occur in Montana on large scale

#11-53 Development of NIST Traceable Calibration Technology for High Accuracy Low Cost Accelerometers
Mike Deily, Resodyn Corporation, Butte

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\$75,000

The Board liked this project because:

- Meets commercialization criteria

The Board expressed concerns as follows:

- Research component
- Project doesn't favor as well as others considering the money available to the Board for funding new projects

IV. Miscellaneous

(a) Clean Coal/Renewable Energy

The Board discussed general program issues including the projects that can be considered clean coal/renewable energy projects and the legislative requirement that 30% of funding must go to clean coal/renewable energy projects.

(b) Next Meetings

June 15, 2010 – Helena – Presentations and possible funding decisions

June 29, 2010 – Conference call to make final funding decisions if necessary

(c) Support of Legislators

Paul Tuss informed the Board of the potential that MBRCT, as well as a host of other Economic Development programs, may be subject to a validity analysis prior to the upcoming legislative session. He suggested the Board might consider a request to eliminate the statutory requirements regarding production agriculture and clean coal/renewable resources. It was the consensus of the Board that a coordinated effort needs to be made to inform legislators about the value of the MBRCT program. Such an effort would follow appropriate procedures.

V. Public Comment

There was no public comment.

VI. Adjournment

Todd Graetz moved to adjourn the meeting. Erik Somerfeld seconded the motion and Chairman Connell adjourned the meeting at 11:45 am.

Respectfully submitted,

Marty Connell, Chairman